

## CLAIMS

WHAT IS CLAIMED IS:

1. A system for implementing a virtual reality (VR) keyboard, the system comprising:

5 a VR headset including at least one display and worn by a user with the at least one display viewable by the user, with the VR headset responsive to first image data, for displaying the VR keyboard to the user through the at least one display, with the VR keyboard having a first appearance corresponding to the  
10 first image data;

a VR input device, responsive to motion of a portion of the body of the user, for generating input signals corresponding to the motion; and

a processor connected to the VR headset and operating a  
15 VR keyboard generating program for providing the first image data to the headset, the processor being responsive to the input signals from the VR input device, for generating motion image data corresponding to the motion; and

wherein the VR headset is responsive to the motion  
20 image data for generating the VR keyboard having a second appearance corresponding to the motion of the portion of the body of the user.

2. The system of claim 1, wherein the VR input device is responsive to the motion of the fingers of the user corresponding to keystrokes to generate the input signals;

wherein the processor, responsive to the keystroke-  
5 corresponding input signals, generates finger-motion image data;  
and

wherein the VR headset is responsive to the finger-  
motion image data for generating the VR keyboard having the  
second appearance representing depressed VR keys on the VR  
10 keyboard, thereby displaying depressed VR keys in response to VR  
keystrokes.

3. The system of claim 2, wherein the processor,  
responsive to the input signals from the VR input device,  
15 generates corresponding input data output to external devices  
with the input data corresponding to the VR keystrokes.

4. The system of claim 3, wherein the input data  
corresponds to at least one of a command, text, and a graphic  
20 user interface signal.

5. The system of claim 3, wherein the external device is a graphic user interface responsive to the input data corresponding to mouse operations and text.

5 6. The system of claim 1, wherein the processor generates VR world data; and

wherein the VR headset generates a VR world corresponding to the VR world data, with the VR keyboard displayed in the VR world.

10 7. The system of claim 1, wherein the processor, responsive to a selected mapping chosen from a plurality of predetermined mappings, generates the first image data corresponding to the VR keyboard having VR keys corresponding to  
15 the selected mapping; and

wherein the VR headset, responsive to the first image data, displays the VR keyboard having VR keys corresponding to the selected mapping.

20 8. The system of claim 7, wherein the predetermined mappings include specifications for VR keys corresponding to different language.

9. The system of claim 7, wherein the predetermined mappings include specifications for VR keys corresponding to different predefined computer commands.

5 10. The system of claim 7, wherein the predetermined mappings include specifications for positioning a plurality of keys having different positions on a common keyboard shape.

10 11. The system of claim 7, wherein the predetermined mappings include specifications for defining different VR keyboard shapes and key orientations displayed in virtual reality.

15 12. The system of claim 2, wherein the VR input device includes force-feedback means for selectively generating pressure to the fingers of the user during motion of the fingers;

wherein the processor, responsive to the input data from the VR input device, controls the force-feedback means.

13. The system of claim 2, wherein the processor includes:  
a neural network, responsive to the input signals, for  
learning a custom three-dimensional orientation of at least one  
hand and at least one finger of a predetermined user during use  
5 of the VR keyboard by the predetermined user; and

wherein the processor, responsive to the input signals  
applied to the trained neural network, for predicting the VR keys  
to be depressed corresponding to the motion of the keystroke-  
corresponding input signals, and for generating the corresponding  
10 finger-motion image data.

14. The system of claim 13, wherein the trained neural  
network, responsive to the input signals, authenticates a current  
user as the predetermined user.

15. The system of claim 1, wherein the VR headset includes:  
an orientation sensor, responsive to a vertical  
orientation of the head of the user wearing the VR headset, for  
generating an orientation signal; and

20 wherein the processor, responsive to the orientation  
signal, for generating the first and second image data in  
response to the vertical orientation being within a predetermined  
vertical range, and for not generating any of the first and

second image data in response to the vertical orientation being outside of the predetermined vertical range.

16. The system of claim 1, further comprising:

5 a switch for switching input signals to the processor either from the VR input device or from a physical keyboard.

17. The system of claim 2, wherein the processor generates VR hand image data corresponding to the motion of the fingers;

10 and

wherein the VR headset, responsive to the VR hand image data, generates VR images of at least one VR hand having at least one VR finger positioned substantially adjacent to the VR keyboard, with the at least one VR finger appearing to depress  
15 the depressed VR keys corresponding to the motion of the physical hand of the user.

18. A system for implementing an interactive virtual reality (VR) keyboard, the system comprising:

20 a VR headset including at least one liquid crystal display (LCD) and worn by a user with the at least one LCD viewable by the user, with the VR headset responsive to first image data, for displaying the VR keyboard to the user through

the at least one LCD, with the VR keyboard having a first appearance corresponding to the first image data;

a VR input device, including a VR glove, responsive to motion of the fingers and hands of the user corresponding to keystrokes, for generating input signals corresponding to the motion;

a processor connected to the VR headset and operating a VR keyboard generating program for providing the first image data to the VR headset, the processor being responsive to the keystroke-corresponding input signals, generates finger-motion image data; and

wherein the VR headset is responsive to the finger-motion image data for generating the VR keyboard having the second appearance representing depressed VR keys on the VR keyboard, thereby displaying depressed VR keys in response to VR keystrokes.

19. A method for providing an interactive virtual reality (VR) keyboard, the method comprising the steps of:

operating a VR keyboard generating program using a processor;

outputting first image data to a VR headset having a display;

displaying the VR keyboard on the display to the user,  
with the VR keyboard having a first appearance corresponding to  
the first image data;

detecting motion at a VR input device, with the motion  
5 due to movement of the fingers and hands of the user  
corresponding to keystrokes;

generating input signals at the VR input device  
corresponding to the motion;

generating finger-motion image data using the processor  
10 corresponding to the input signals; and

generating the VR keyboard on the display of the VR  
headset using the finger motion data, with the VR keyboard having  
a second appearance representing depressed VR keys on the VR  
keyboard, thereby displaying depressed VR keys in response to VR  
15 keystrokes.

20. The method of claim 19, wherein the step of displaying  
the VR keyboard on the display to the user includes the step of:

displaying a selected keyboard image from a plurality  
20 of keyboard images.